REMARKS

I. Status Summary

Claims 1, 4-9 and 11-26 are pending in the present application. Claims 11-24 have been withdrawn. Claims 1, 4-9, 25 and 26 have been examined by the Patent Office and currently stand rejected.

Claims 1 and 26 have been amended. Support for the amendments can be found in the instant specification as filed. No new matter has been added.

Reconsideration of the claims in view of the remarks and amendment herein is respectfully requested.

II. Response to Rejections under 35 U.S.C. § 103(a) over Suzuki in view of Ohkoshi and Leenslag

Claims 1, 8, 25, and 26 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over JP 2003-16615 A to Suzuki et al. (hereinafter "Suzuki") in view of U.S. Patent No. 6,497,952 to Ohkoshi et al. (hereinafter "Ohkoshi") and Leenslag et al. (1984 *Journal of Applied Polymer Science* 29:2829-2842; hereinafter "Leenslag"). The Patent Office contends that Suzuki teaches a method for manufacturing drawn filament comprising the steps of drawing an original filament to a draw ratio of 1000 times or more by tension of 1 MPa or less per single filament while heating with an infrared beam where the beam diameter is 4.3 mm and would be within a maximum of 2.15 mm from the center of the filament. The Patent Office further contends that Suzuki teaches that the process can be applied to natural fibers that are inherently biodegradable.

The Patent Office concedes that Suzuki does not expressly disclose a plurality of beams or biodegradable synthetic fibers. However, the Patent Office alleges that Ohkoshi discloses a method of applying an infrared beam to a fiber to heat and draw the fiber and that the beam is reflected back at the fiber. Thus, the Patent Office contends that it would have been obvious to modify the method of Suzuki to include the beam control of Ohkoshi in order to control the size of the irradiated region of the thread and to control the temperature of the thread during drawing. The Patent Office further alleges that Leenslag discloses hot drawing of a synthetic biodegradable polymer, e.g.,

poly(L-lactide) (PLLA). Therefore, the Patent Office contends that it would have been obvious to apply the method of Suzuki to the fibers of Leenslag because the hot draw of PLLA filaments was known.

After careful consideration of the rejections and the Patent Office's bases therefore, applicants respectfully traverse the rejections and submit the following remarks.

Initially, applicants respectfully submit that claim 1 has been amended to recite "wherein the delivering comprises flowing a gas in the blowing duct." Support for the amendment can be found in the instant specification as filed, for example, at page 11, line 14 to page 12, line 6; and at page 25, lines 3-15.

In addition, claim 26 has been amended herein to replace "polygluamic acid" with "polyglutamic acid." Support for the amendment can be found in the instant specification at page 5, line 10.

Applicants respectfully submit that to support a contention of obviousness: (a) all the claimed elements must be known in the art; (b) one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions; and (c) the combination would have yielded nothing more than predictable results to one of ordinary skill in the art. See Manual of Patent Examining Procedure (hereinafter "MPEP") § 2143.02. The mere fact that references can be combined or modified does not render the combination obvious unless the results would have been predictable to one of ordinary skill in the art. See MPEP § 2143.01, citing *KSR International Co. v. Teleflex Inc.*, 550 U.S. ___, ___, 82 USPQ2d 1385, 1396 (2007).

Applicants respectfully submit that the presently disclosed and claimed subject matter provides for the manufacturing of drawn synthetic biodegradable filament from an original synthetic biodegradable filament at a large draw ratio. Synthetic biodegradable filaments, such as for example polylactic acid fibers, polyglycolic acid fibers, polyglutamic acid fibers, poly-p-dioxic acid fibers, poly-α-malic acid fibers or poly-β-hydroxybutyric acid fibers, and the like, are difficult to draw and manufacture into microfibers due to poor spinning and drawing properties. *See, e.g.*, the Background of the Invention section at pages 1-3 of the instant specification. As described in the

instant specification, the presently disclosed subject matter can provide large draw ratios for these hard to draw fibers by rapid drawing at a high temperature in a narrow drawing region at a relatively low tension level. See Instant Specification, page 7, lines 2-4 and page 9, lines 8-20. Claim 1 expressly recites drawing the synthetic biodegradable filament to a draw ratio of 100 times or more.

In marked contrast to the presently disclosed and claimed subject matter, Suzuki, at best, describes applications for natural fibers, e.g. silk, or applications for filaments comprising a readily drawn polymer, e.g., nylon, PET and polypropylene. Applicants respectfully believe that Ohkoshi is being cited for its teaching related to applying an infrared beam to a fiber and reflecting the beam back onto the fiber. Leenslag discloses hot drawing of PLLA, a biodegradable synthetic fiber. However, the hot drawing of Leenslag occurs in a tube furnace. See Leenslag, page 2830. Further, Leenslag does not describe drawing the PLLA to a draw ratio of 100 or more. Table II of Leenslag appears to describe draw ratios of between 5.0 and 11.8. See Leenslag, page 2836. Accordingly, even assuming arguendo that one of skill in the art were to use the PLLA of Leenslag in the method of Suzuki combined with Ohkoshi, given the known poor drawing properties of synthetic biodegradable filaments, one would still have no expectation of success in drawing a synthetic biodegradable filament to a draw ratio of 100 times or more as recited in claim 1. Reference is also made to Figures 7-11 of the instant specification, which show that the instantly claimed methods can provide drawn polylactic acid and polyglycolic acid with draw ratios over 100 and in some cases over 1000.

Additionally, applicants respectfully submit that none of the cited references teach or suggest a method that uses a blowing duct, as recited in claim 1. As described in the instant specification, supplying the original filament via a guiding tool just before the drawing point can contribute to the stability of drawing. See Instant Specification, page 11, lines 6-8. In particular, the use of a blowing duct, wherein a gas (e.g., air) can be actively delivered through the duct (e.g., in the running direction of the filament), can be advantageous, since it does not disturb the running of the filament by resistance and can still add a certain drawing tension by the momentum of the air when adding tension actively is not desired. See Instant Specification, page 11, lines 14-16; page 25, lines 8-

13; and also, the sentence bridging pages 26 and 27. To further highlight aspects related to the blowing duct delivery step of claim 1, claim 1(b) has been amended as described hereinabove to recite "wherein the delivering comprises flowing a gas in the blowing duct."

Accordingly, applicants respectfully submit that Suzuki, Ohkoshi, and Leenslag, either alone or in combination, do not teach or suggest the method of claim 1. Each of claims 8, 25, and 26 depend from claim 1 and therefore include each and every element of claim 1. Thus, claims 8, 25, and 26 are also distinguishable from the cited combination.

Applicants respectfully request that the rejection of claims 1, 8, 25, and 26 under 35 U.S.C. § 103(a) over Suzuki, Ohkoshi and Leenslag be withdrawn and further request that claims 1, 8, 25, and 26 be allowed at this time.

III. Response to Rejections Under 35 U.S.C. § 103(a) over Suzuki in view of Ohkoshi and Leenslag and further in view of Davis

Claims 4-7 have been rejected under 35 U.S.C. § 103(a) upon the contention that the claims are unpatentable over Suzuki in view of Ohkoshi and Leenslag and further in view of U.S. Patent No. 4,101,525 to Davis et al. (hereinafter "Davis"). The Patent Office concedes that Suzuki does not expressly disclose further heating and drawing the drawn filament in heating and drawing zones. However, the Patent Office contends that Davis discloses a method of drawing a filament wherein the drawn filament is subjected to heating and drawing in zones. Therefore, the Patent Office contends that it would have been obvious to modify Suzuki to include the further heating and drawing of Davis in order to improve the properties of the final filament.

After careful consideration of the rejections and the Patent Office's bases therefore, applicants respectfully traverse the rejections and submit the following remarks.

Applicants respectfully submit that claims 4-7 depend from claim 1 and therefore include each and every element of claim 1. As noted hereinabove, Suzuki, Ohkoshi, and Leenslag, either alone or in combination, do not teach each and every element of claim 1. Applicants respectfully submit that Davis is being cited herein for its teaching

with regard to heating zones. Davis does not overcome the deficiencies of Suzuki, Ohkoshi and Leenslag with regard to claim 1.

As such, applicants respectfully submit that Suzuki, Ohkoshi, Leenslag and Davis do not teach or suggest each and every element of claim 1 or its dependent claims, claims 4-7. Applicants respectfully request that the rejection of claims 4-7 under 35 U.S.C. § 103(a) over Suzuki, Ohkoshi, Leenslag and Davis be withdrawn and further ask that claims 4-7 be allowed at this time.

IV. Response to Rejections Under 35 U.S.C. § 103(a) over Suzuki in view of Ohkoshi and Leenslag and further in view of Tanka

Claim 9 has been rejected under 35 U.S.C. § 103(a) upon the contention that the claim is unpatentable over Suzuki in view of Ohkoshi and Leenslag and further in view of U.S. Patent No. 5,506,041 to Tanaka et al. (hereinafter "Tanaka"). The Patent Office concedes that Suzuki does not expressly disclose collecting the filaments on a running conveyor. However, the Patent Office contends that Tanaka discloses a method of forming biodegradable filaments that are collected onto a conveyor. Therefore, the Patent Office contends that it would have been obvious to modify Suzuki to include the collecting of Tanaka because collecting fibers on conveyors in order to form non-woven fabrics was well known in the art.

After careful consideration of the rejections and the Patent Office's bases therefore, applicants respectfully traverse the rejections and submit the following remarks.

Applicants respectfully submit that claim 9 depends from claim 1 and therefore includes each and every element of claim 1. As noted hereinabove, Suzuki, Ohkoshi, and Leenslag, either alone or in combination, do not teach each and every element of claim 1. Applicants respectfully submit that Tanaka is being cited herein for its teaching with regard to conveyors. Tanaka does not overcome the deficiencies of Suzuki, Ohkoshi and Leenslag with regard to claim 1.

As such, applicants respectfully submit that Suzuki, Ohkoshi, Leenslag and Tanaka do not teach or suggest each and every element of claim 1 or its dependent claim, claim 9. Applicants respectfully request that the rejection of claim 9 under 35

U.S.C. § 103(a) over Suzuki, Ohkoshi, Leenslag and Tanaka be withdrawn and further ask that claim 9 be allowed at this time.

CONCLUSION

In light of the above Amendments and Remarks, it is respectfully submitted that the present application is now in proper condition for allowance, and an early notice to such effect is earnestly solicited.

If any small matter should remain outstanding after the Patent Examiner has had an opportunity to review the above Remarks, the Patent Examiner is respectfully requested to telephone the undersigned patent attorney in order to resolve these matters and avoid the issuance of another Official Action.

DEPOSIT ACCOUNT

The Commissioner is hereby authorized to charge any fees associated with the filing of this correspondence to Deposit Account No. **50-0426**.

Respectfully submitted,

JENKINS, WILSON, TAYLOR & HUNT, P.A.

Date: July 8, 2011 By: _____

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